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FIG. 1

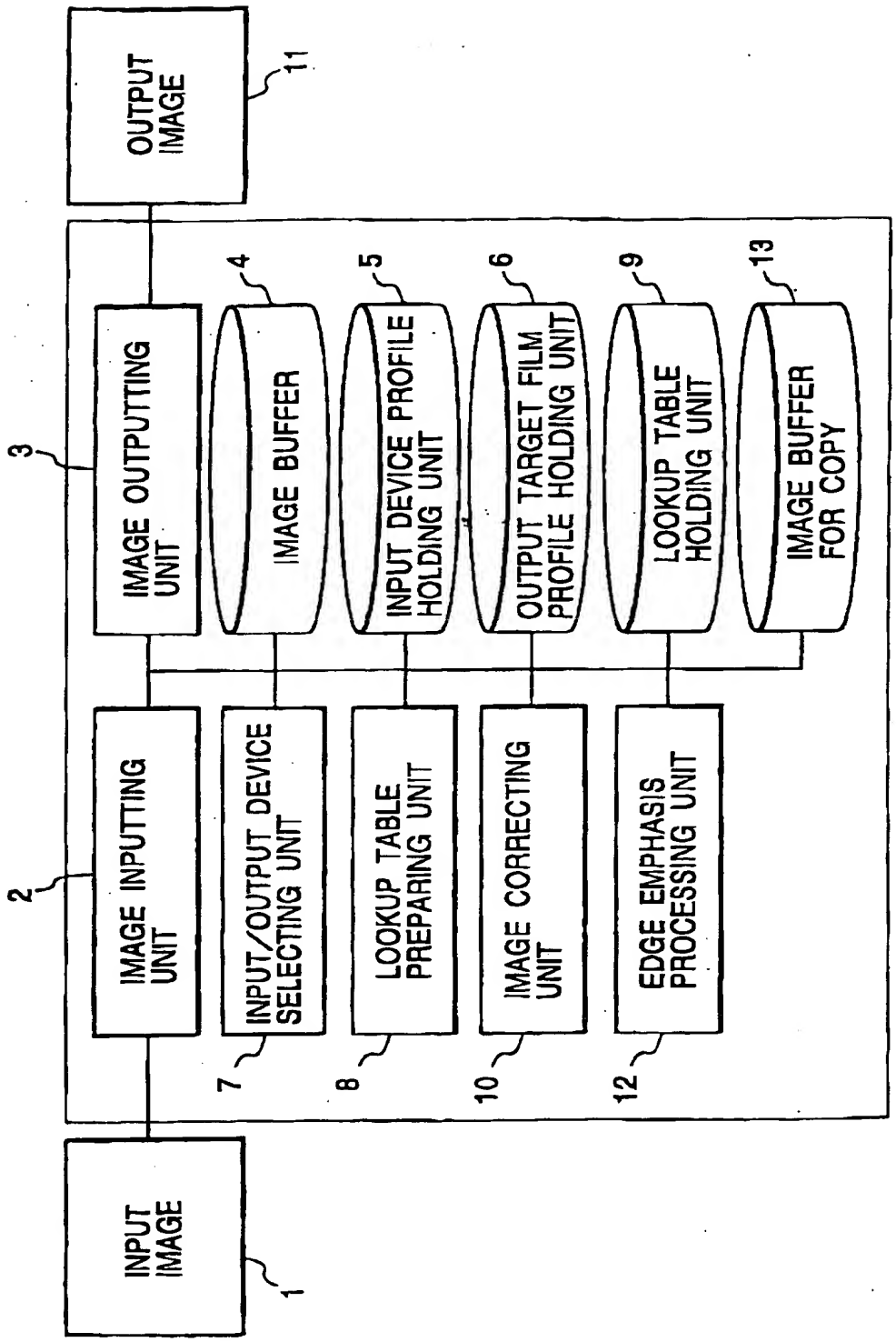
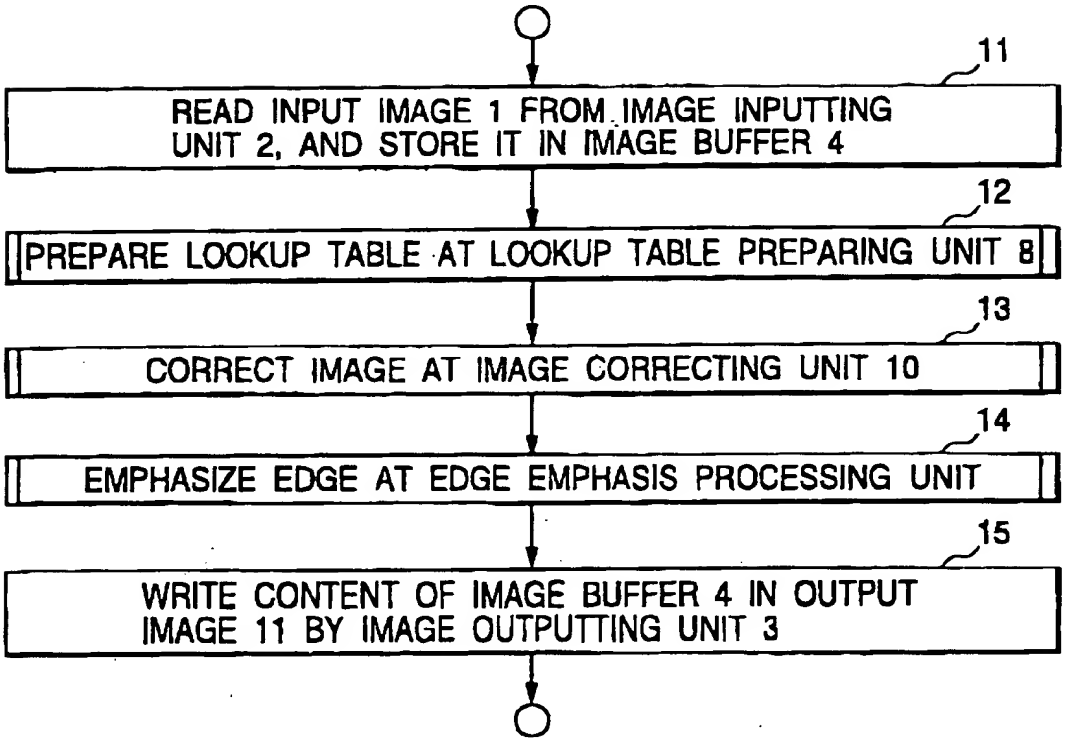

INPUT IMAGE
1
IMAGE INPUTTING UNIT
2
IMAGE OUTPUTTING UNIT
3
IMAGE BUFFER
4
INPUT DEVICE PROFILE HOLDING UNIT
5
OUTPUT TARGET FILM PROFILE HOLDING UNIT
6
INPUT/OUTPUT DEVICE SELECTING UNIT
7
LOOKUP TABLE PREPARING UNIT
8
LOOKUP TABLE HOLDING UNIT
9
IMAGE CORRECTING UNIT
10
OUTPUT IMAGE
11
EDGE EMPHASIS PROCESSING UNIT
12
IMAGE BUFFER FOR COPY
13

FIG. 2


11
READ INPUT IMAGE 1 FROM IMAGE INPUTTING UNIT 2, AND STORE IT IN IMAGE BUFFER 4
12
PREPARE LOOKUP TABLE AT LOOKUP TABLE PREPARING UNIT 8
13
CORRECT IMAGE AT IMAGE CORRECTING UNIT 10
14
EMPHASIZE EDGE AT EDGE EMPHASIS PROCESSING UNIT
15
WRITE CONTENT OF IMAGE BUFFER 4 IN OUTPUT IMAGE 11 BY IMAGE OUTPUTTING UNIT 3

6652250 "11827E60

FIG. 3

TYPE OF INPUT DEVICE		LUMINANCE				
		PATCH 1	PATCH 2	PATCH 3	PATCH 4	.....
INPUT DEVICE A	R COMPONENT	##	##	##	##	##
	G COMPONENT	##	##	##	##	##
	B COMPONENT	##	##	##	##	##
INPUT DEVICE B	R COMPONENT	##	##	##	##	##
	G COMPONENT	##	##	##	##	##
	B COMPONENT	##	##	##	##	##
INPUT DEVICE C	R COMPONENT	##	##	##	##	##
	G COMPONENT	##	##	##	##	##
	B COMPONENT	##	##	##	##	##

INPUT DEVICE WHICH IS BEING SELECTED

FIG. 4

TYPE OF OUTPUT TARGET FILM		LUMINANCE				
		PATCH 1	PATCH 2	PATCH 3	PATCH 4	.....
FILM A	R COMPONENT	##	##	##	##	##
	G COMPONENT	##	##	##	##	##
	B COMPONENT	##	##	##	##	##
FILM B	R COMPONENT	##	##	##	##	##
	G COMPONENT	##	##	##	##	##
	B COMPONENT	##	##	##	##	##
FILM C	R COMPONENT	##	##	##	##	##
	G COMPONENT	##	##	##	##	##
	B COMPONENT	##	##	##	##	##

FILM WHICH IS BEING SELECTED

FIG. 5

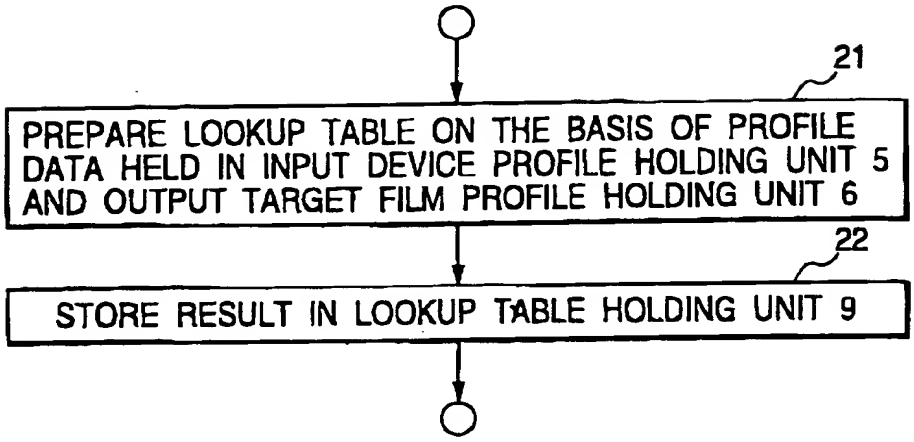

21
PREPARE LOOKUP TABLE ON THE BASIS OF PROFILE DATA HELD IN INPUT DEVICE PROFILE HOLDING UNIT 5 AND OUTPUT TARGET FILM PROFILE HOLDING UNIT 6
22
STORE RESULT IN LOOKUP TABLE HOLDING UNIT 9

FIG. 7

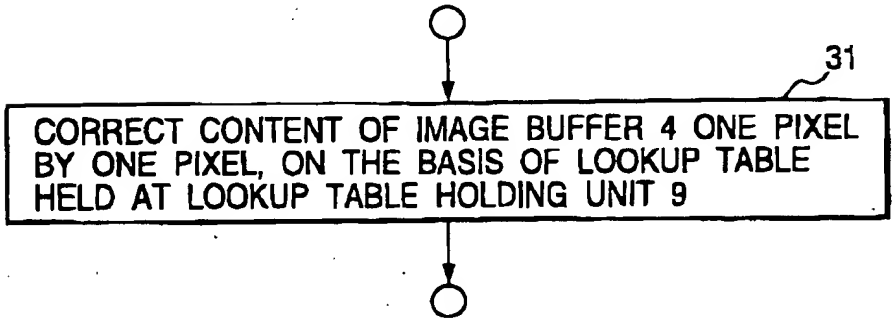

31
CORRECT CONTENT OF IMAGE BUFFER 4 ONE PIXEL BY ONE PIXEL, ON THE BASIS OF LOOKUP TABLE HELD AT LOOKUP TABLE HOLDING UNIT 9

FIG. 6

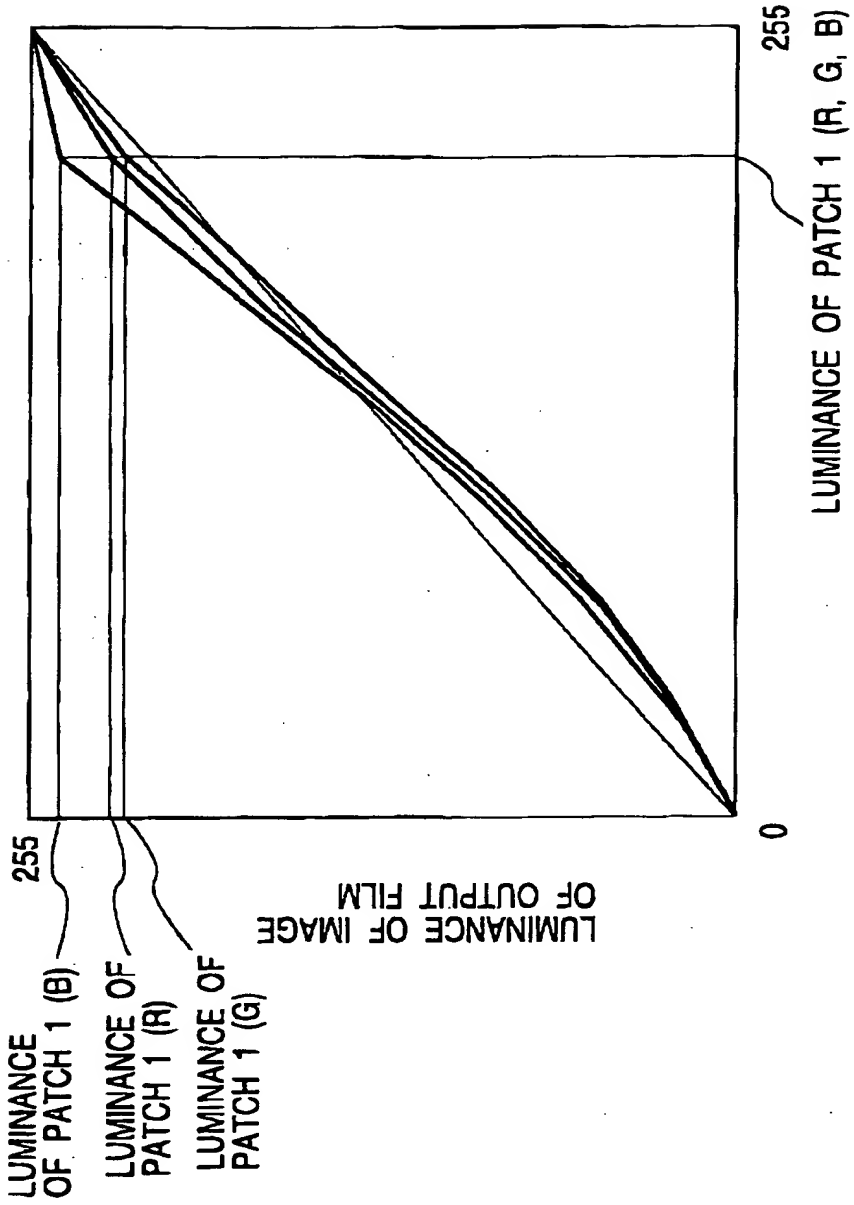

255
0
255
LUMINANCE OF PATCH 1 (R, G, B)
LUMINANCE OF IMAGE OF INPUT DEVICE
LUMINANCE OF IMAGE OF OUTPUT FILM
LUMINANCE OF PATCH 1 (B)
LUMINANCE OF PATCH 1 (R)
LUMINANCE OF PATCH 1 (G)

FIG. 8

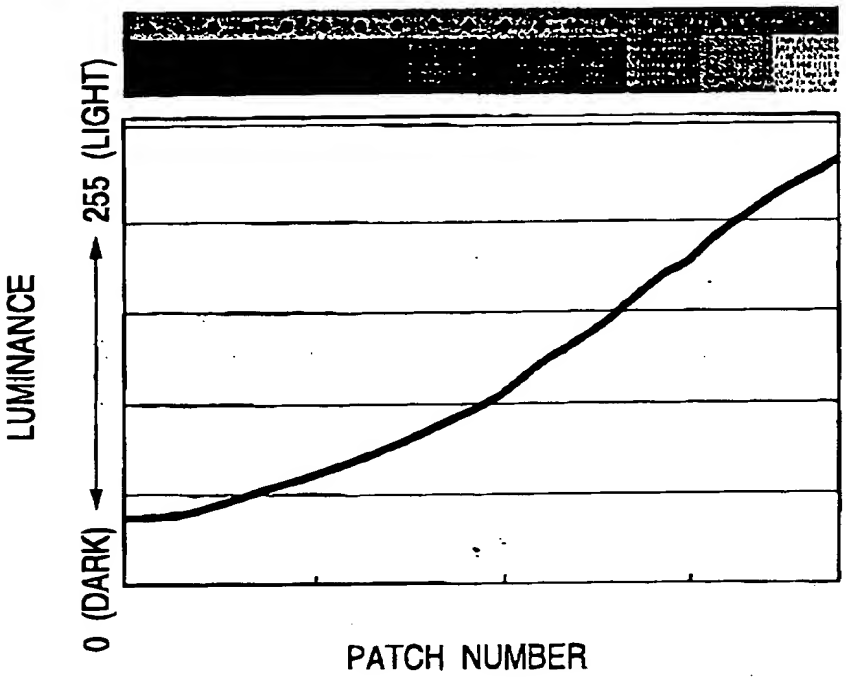

LUMINANCE
255 (LIGHT)
0 (DARK)
PATCH NUMBER

FIG. 9

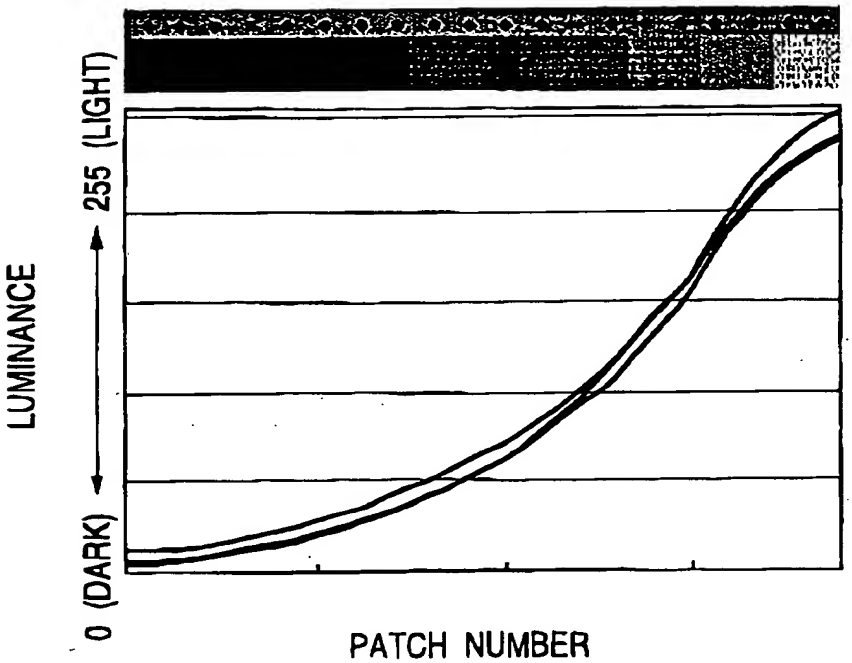

LUMINANCE
255 (LIGHT)
0 (DARK)
PATCH NUMBER

FIG. 10

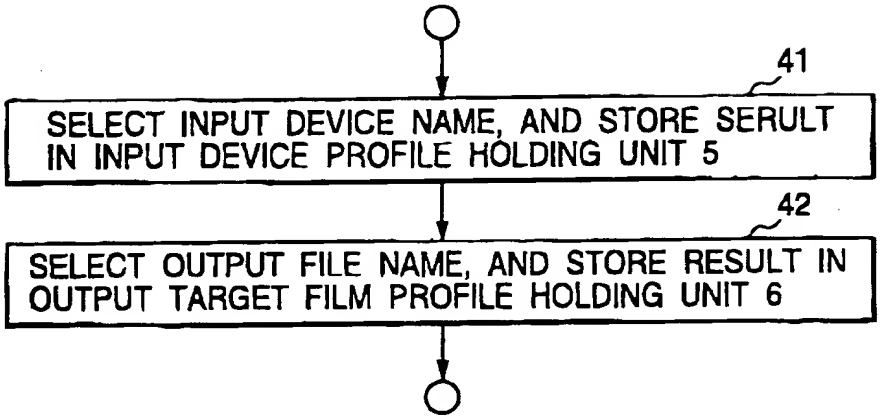

41
SELECT INPUT DEVICE NAME, AND STORE SERULT IN INPUT DEVICE PROFILE HOLDING UNIT 5
42
SELECT OUTPUT FILE NAME, AND STORE RESULT IN OUTPUT TARGET FILM PROFILE HOLDING UNIT 6

FIG. 11

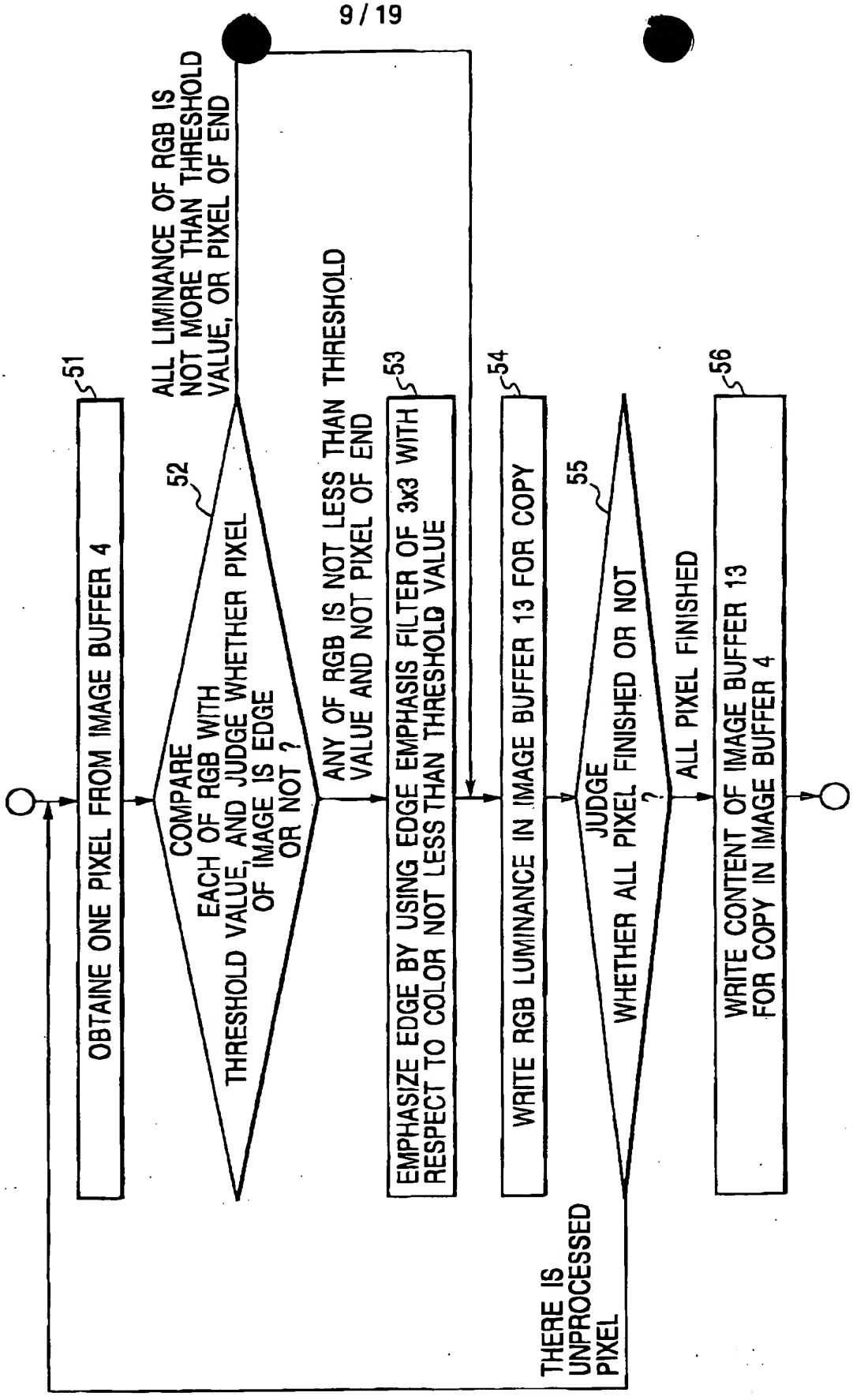

OBTAINE ONE PIXEL FROM IMAGE BUFFER 4
51
COMPARE EACH OF RGB WITH THRESHOLD VALUE, AND JUDGE WHETHER PIXEL OF IMAGE IS EDGE OR NOT ?
52
ALL LIMINANCE OF RGB IS NOT MORE THAN THRESHOLD VALUE, OR PIXEL OF END
ANY OF RGB IS NOT LESS THAN THRESHOLD VALUE AND NOT PIXEL OF END
EMPHASIZE EDGE BY USING EDGE EMPHASIS FILTER OF 3x3 WITH RESPECT TO COLOR NOT LESS THAN THRESHOLD VALUE
53
WRITE RGB LUMINANCE IN IMAGE BUFFER 13 FOR COPY
54
JUDGE WHETHER ALL PIXEL FINISHED OR NOT ?
55
THERE IS UNPROCESSED PIXEL
ALL PIXEL FINISHED
WRITE CONTENT OF IMAGE BUFFER 13 FOR COPY IN IMAGE BUFFER 4
56

FIG. 12

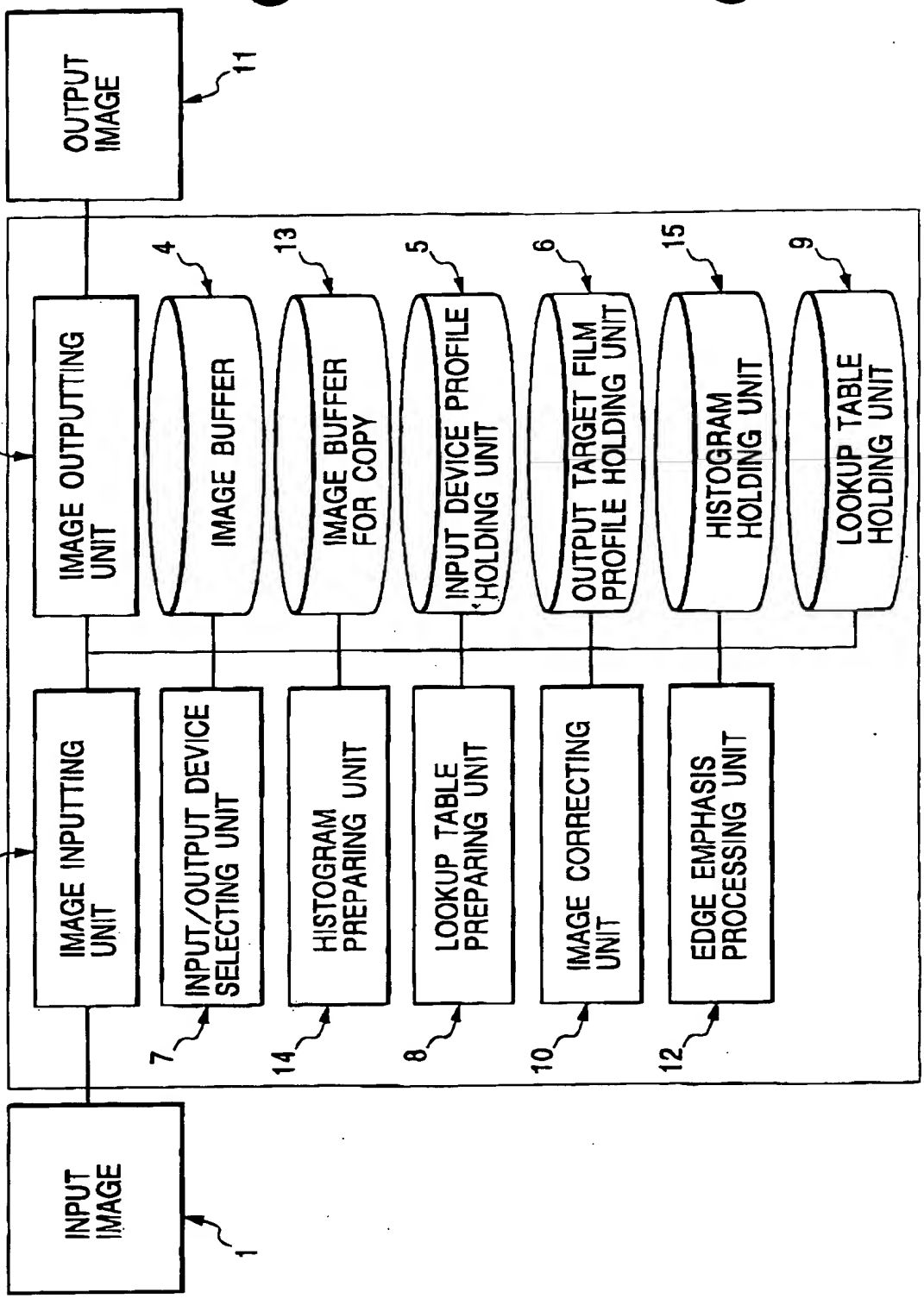

INPUT IMAGE
1
IMAGE INPUTTING UNIT
2
IMAGE OUTPUTTING UNIT
3
IMAGE BUFFER
4
INPUT DEVICE PROFILE HOLDING UNIT
5
OUTPUT TARGET FILM PROFILE HOLDING UNIT
6
INPUT/OUTPUT DEVICE SELECTING UNIT
7
LOOKUP TABLE PREPARING UNIT
8
LOOKUP TABLE HOLDING UNIT
9
IMAGE CORRECTING UNIT
10
OUTPUT IMAGE
11
EDGE EMPHASIS PROCESSING UNIT
12
IMAGE BUFFER FOR COPY
13
HISTOGRAM PREPARING UNIT
14
HISTOGRAM HOLDING UNIT
15

FIG. 13

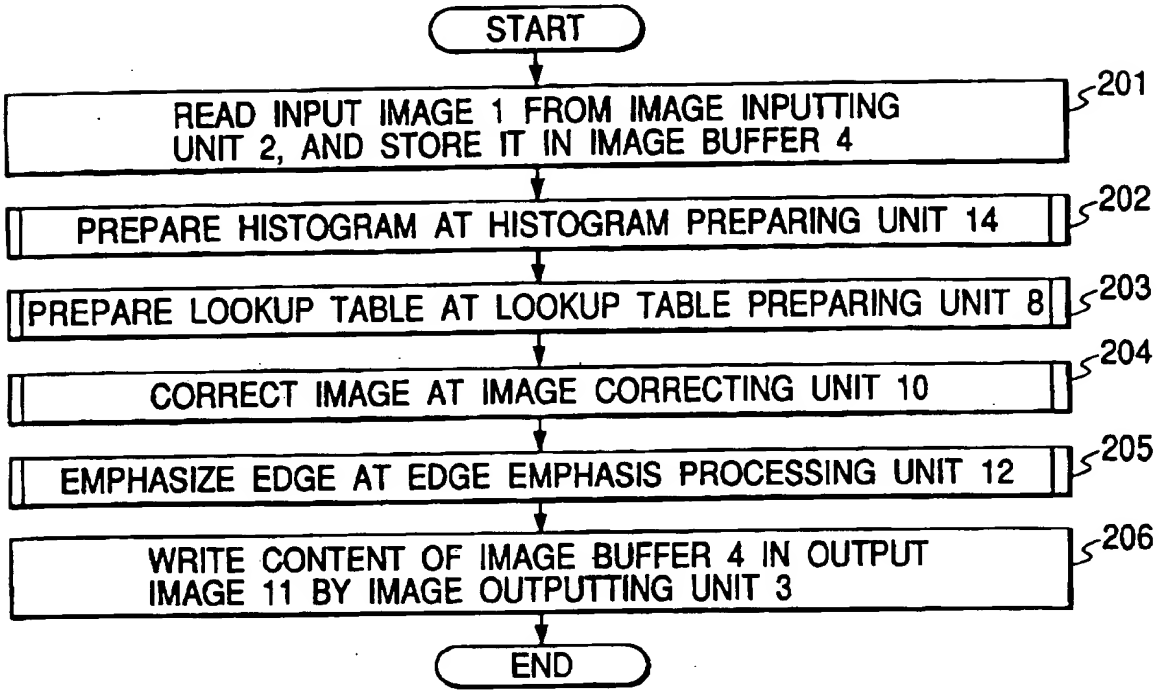
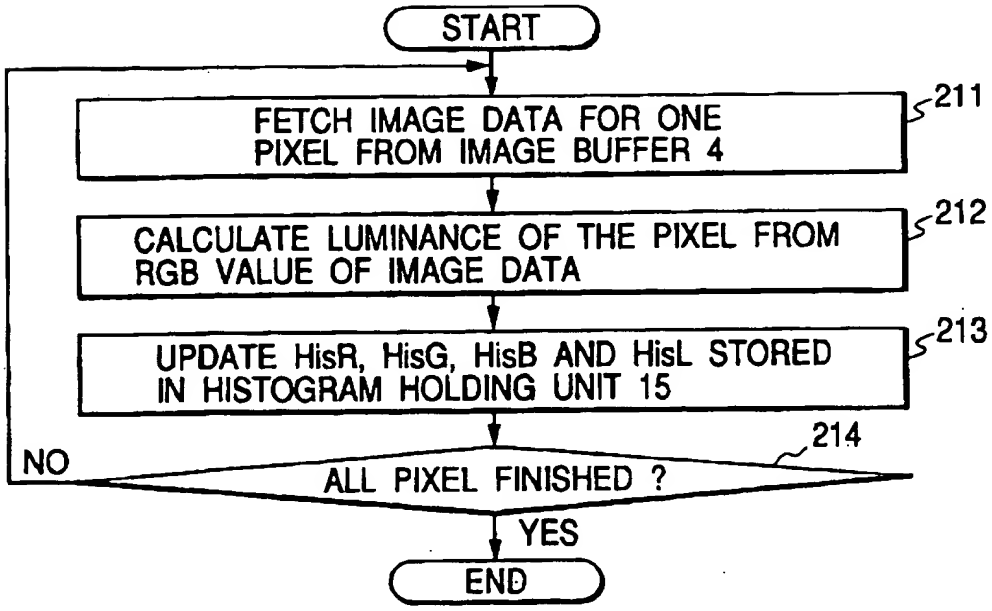

START
READ INPUT IMAGE 1 FROM IMAGE INPUTTING UNIT 2, AND STORE IT IN IMAGE BUFFER 4
201
PREPARE HISTOGRAM AT HISTOGRAM PREPARING UNIT 14
202
PREPARE LOOKUP TABLE AT LOOKUP TABLE PREPARING UNIT 8
203
CORRECT IMAGE AT IMAGE CORRECTING UNIT 10
204
EMPHASIZE EDGE AT EDGE EMPHASIS PROCESSING UNIT 12
205
WRITE CONTENT OF IMAGE BUFFER 4 IN OUTPUT IMAGE 11 BY IMAGE OUTPUTTING UNIT 3
206
END

FIG. 14


START
FETCH IMAGE DATA FOR ONE PIXEL FROM IMAGE BUFFER 4
211
CALCULATE LUMINANCE OF THE PIXEL FROM RGB VALUE OF IMAGE DATA
212
UPDATE HisR, HisG, HisB AND HisL STORED IN HISTOGRAM HOLDING UNIT 15
213
214
NO
ALL PIXEL FINISHED ?
YES
END

0652550 "4+8Z+250

FIG. 15

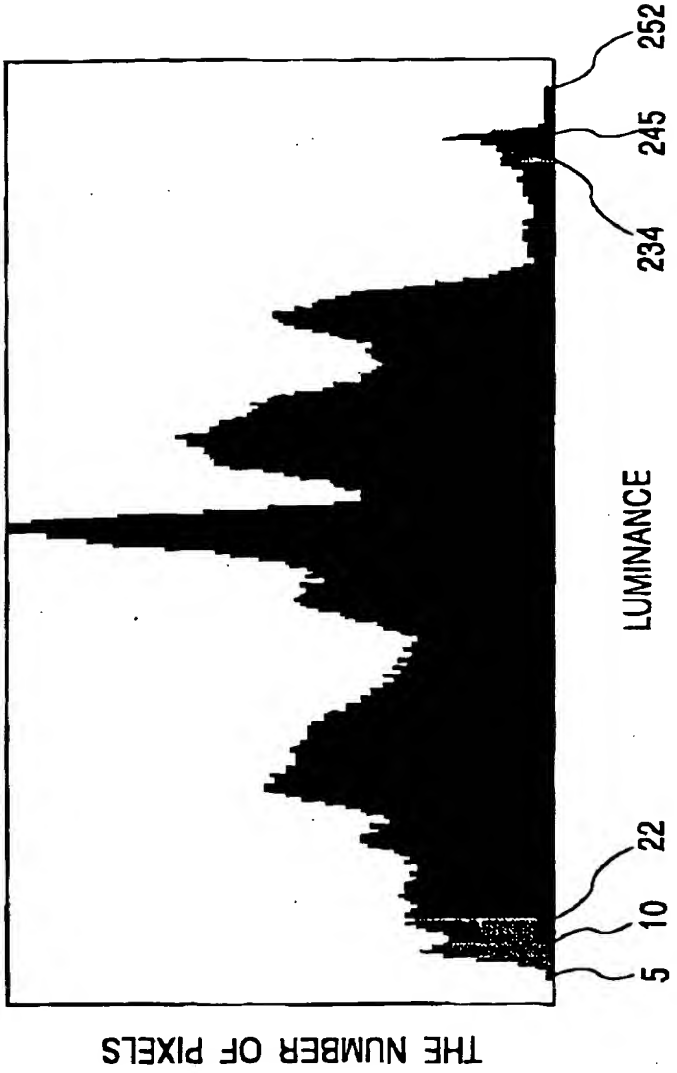


FIG. 16

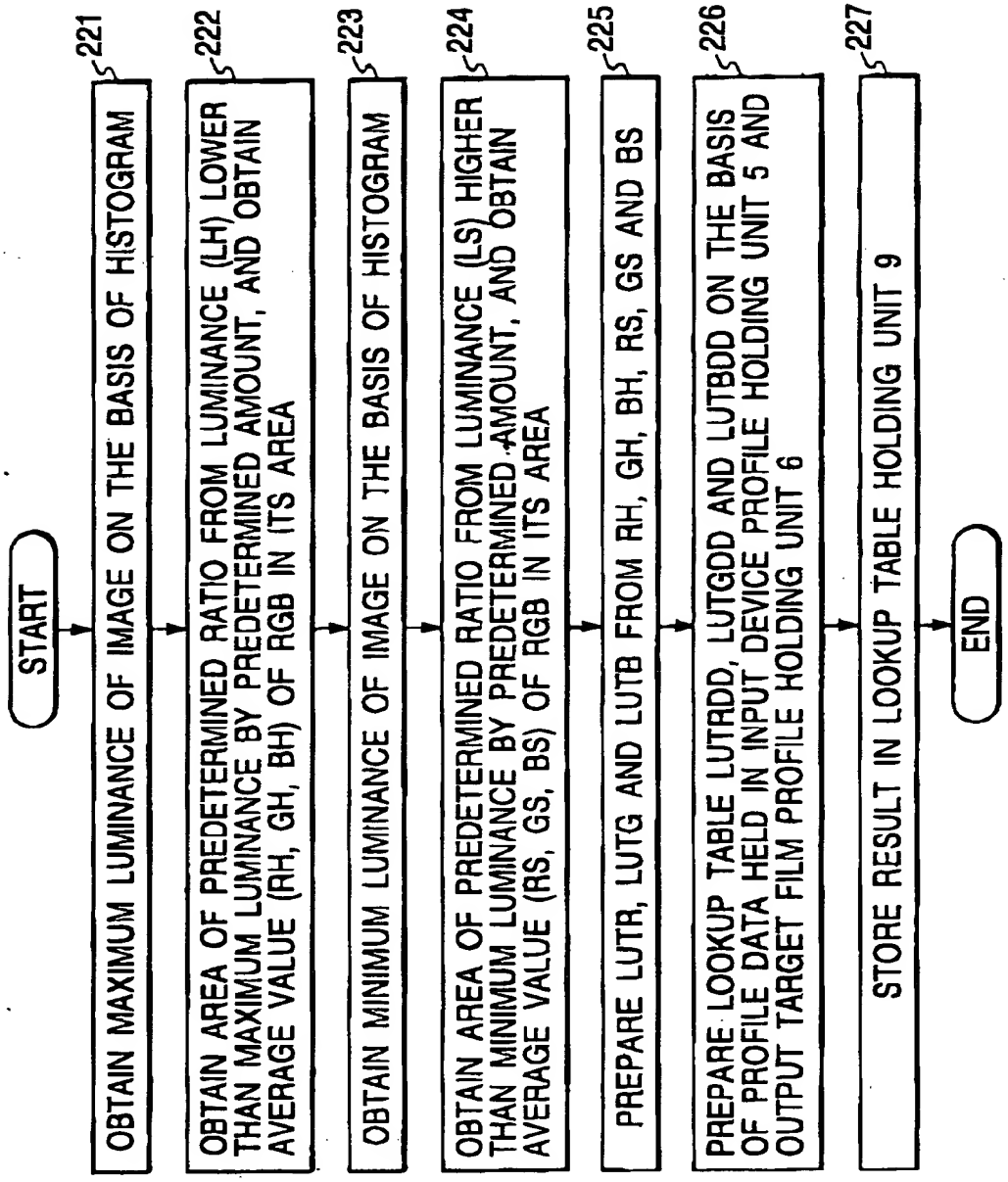

START
221
OBTAIN MAXIMUM LUMINANCE OF IMAGE ON THE BASIS OF HISTOGRAM
222
OBTAIN AREA OF PREDETERMINED RATIO FROM LUMINANCE (LH) LOWER THAN MAXIMUM LUMINANCE BY PREDETERMINED AMOUNT, AND OBTAIN AVERAGE VALUE (RH, GH, BH) OF RGB IN ITS AREA
223
OBTAIN MINIMUM LUMINANCE OF IMAGE ON THE BASIS OF HISTOGRAM
224
OBTAIN AREA OF PREDETERMINED RATIO FROM LUMINANCE (LS) HIGHER THAN MINIMUM LUMINANCE BY PREDETERMINED AMOUNT, AND OBTAIN AVERAGE VALUE (RS, GS, BS) OF RGB IN ITS AREA
225
PREPARE LUTR, LUTG AND LUTB FROM RH, GH, BH, RS, GS AND BS
226
PREPARE LOOKUP TABLE LUTRDD, LUTGDD AND LUTBDD ON THE BASIS OF PROFILE DATA HELD IN INPUT DEVICE PROFILE HOLDING UNIT 5 AND OUTPUT TARGET FILM PROFILE HOLDING UNIT 6
227
STORE RESULT IN LOOKUP TABLE HOLDING UNIT 9
END

FIG. 17A

LUT FOR CORRECTING COLOR FOG AND CONTRAST

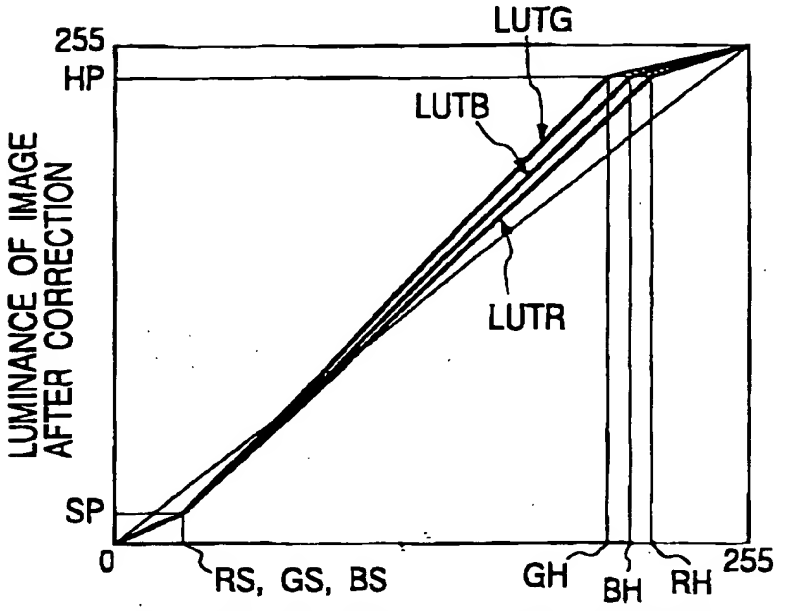


FIG. 17B

LUT FOR DIGITAL DEVELOPMENT

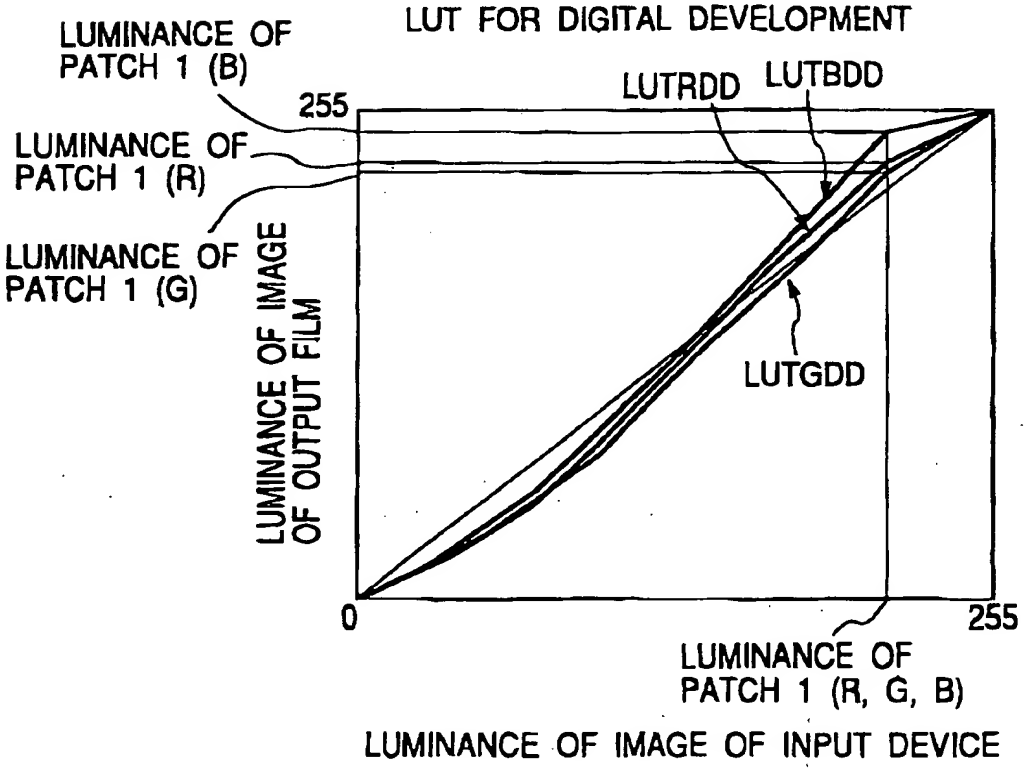


FIG. 18

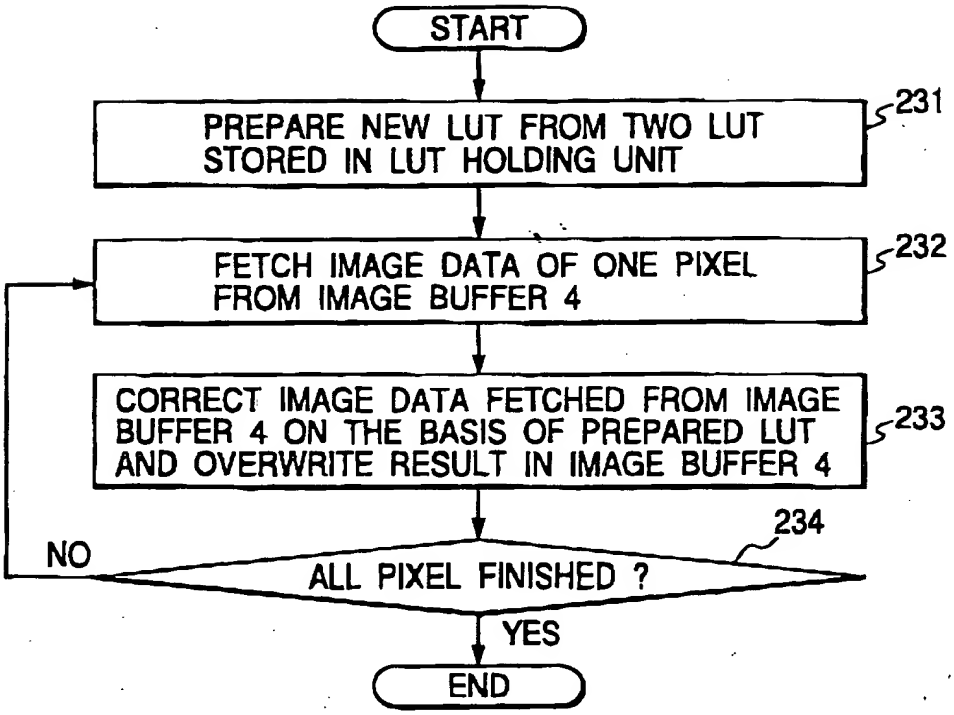

START
PREPARE NEW LUT FROM TWO LUT STORED IN LUT HOLDING UNIT
231
FETCH IMAGE DATA OF ONE PIXEL FROM IMAGE BUFFER 4
232
CORRECT IMAGE DATA FETCHED FROM IMAGE BUFFER 4 ON THE BASIS OF PREPARED LUT AND OVERWRITE RESULT IN IMAGE BUFFER 4
233
234
NO
ALL PIXEL FINISHED ?
YES
END

FIG. 19

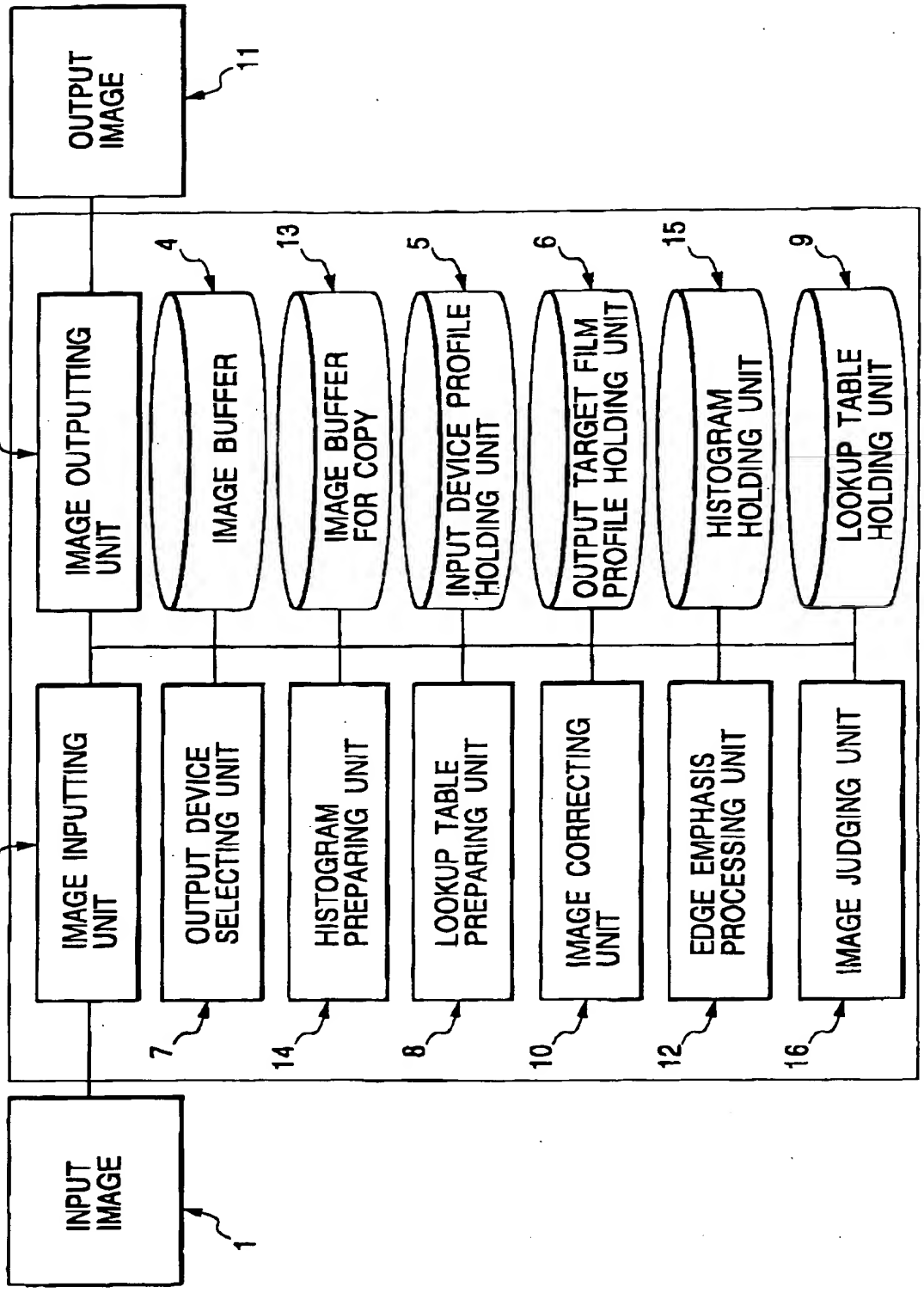

INPUT IMAGE
1
OUTPUT IMAGE
11
2
IMAGE INPUTTING UNIT
3
IMAGE OUTPUTTING UNIT
4
IMAGE BUFFER
13
IMAGE BUFFER FOR COPY
5
INPUT DEVICE PROFILE HOLDING UNIT
6
OUTPUT TARGET FILM PROFILE HOLDING UNIT
15
HISTOGRAM HOLDING UNIT
9
LOOKUP TABLE HOLDING UNIT
7
OUTPUT DEVICE SELECTING UNIT
14
HISTOGRAM PREPARING UNIT
8
LOOKUP TABLE PREPARING UNIT
10
IMAGE CORRECTING UNIT
12
EDGE EMPHASIS PROCESSING UNIT
16
IMAGE JUDGING UNIT

FIG. 20

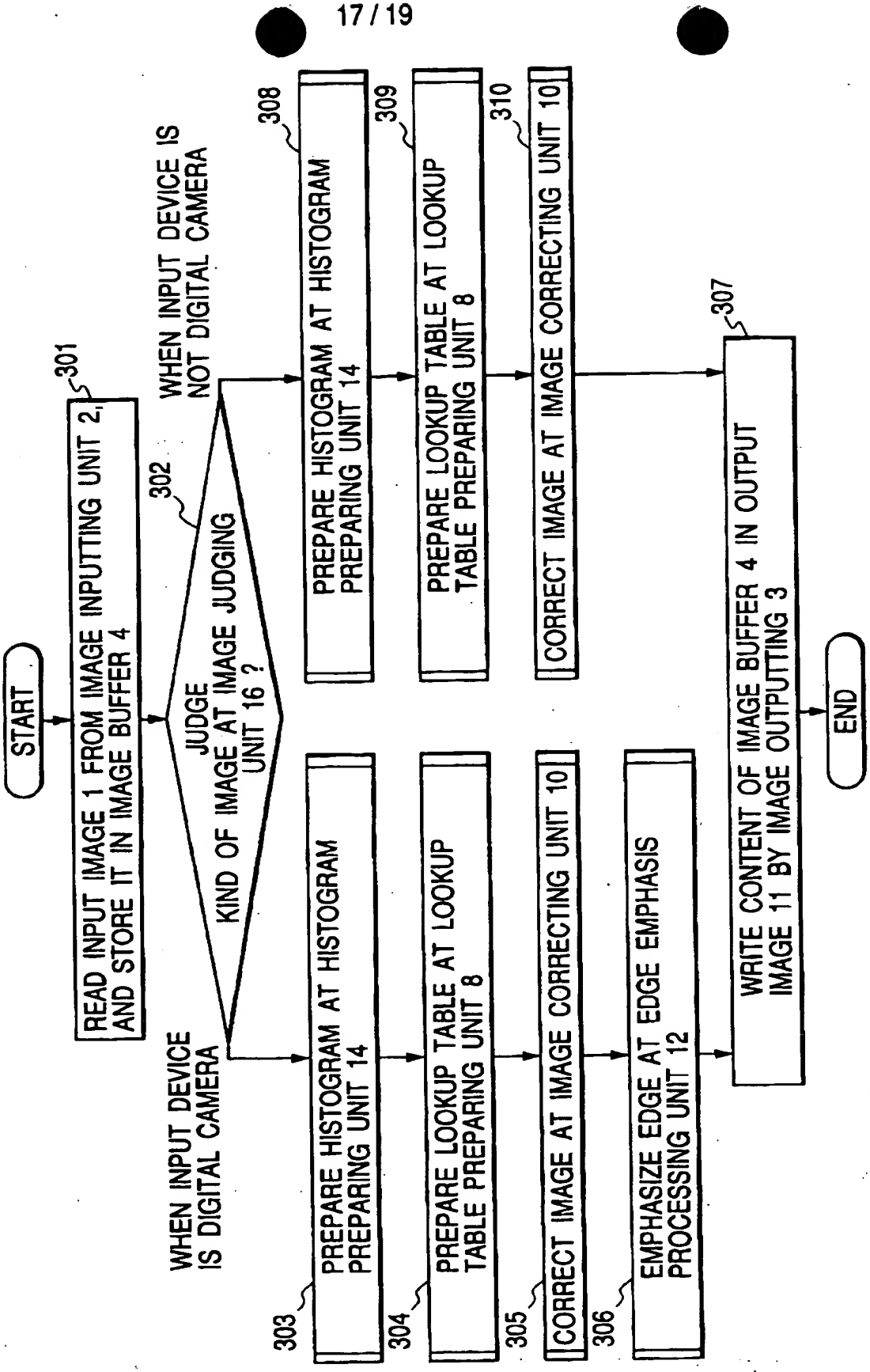

START
READ INPUT IMAGE 1 FROM IMAGE INPUTTING UNIT 2, AND STORE IT IN IMAGE BUFFER 4
301
JUDGE KIND OF IMAGE AT IMAGE JUDGING UNIT 16 ?
302
WHEN INPUT DEVICE IS DIGITAL CAMERA
WHEN INPUT DEVICE IS NOT DIGITAL CAMERA
303
PREPARE HISTOGRAM AT HISTOGRAM PREPARING UNIT 14
304
PREPARE LOOKUP TABLE AT LOOKUP TABLE PREPARING UNIT 8
305
CORRECT IMAGE AT IMAGE CORRECTING UNIT 10
306
EMPHASIZE EDGE AT EDGE EMPHASIS PROCESSING UNIT 12
308
PREPARE HISTOGRAM AT HISTOGRAM PREPARING UNIT 14
309
PREPARE LOOKUP TABLE AT LOOKUP TABLE PREPARING UNIT 8
310
CORRECT IMAGE AT IMAGE CORRECTING UNIT 10
307
WRITE CONTENT OF IMAGE BUFFER 4 IN OUTPUT IMAGE 11 BY IMAGE OUTPUTTING 3
END

FIG. 21

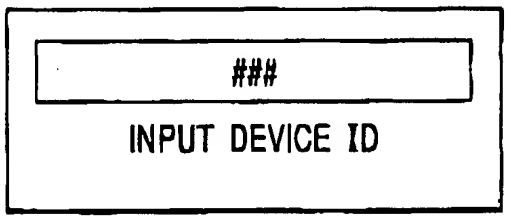


IMAGE HEADER

PIXEL	R VALUE	G VALUE	B VALUE
IMG[0]	##	##	##
IMG[1]	##	##	##
IMG[2]	##	##	##
IMG[3]	##	##	##
IMG[4]	##	##	##
IMG[5]	##	##	##
IMG[6]	##	##	##
IMG[7]	##	##	##
:			
IMG[n]	##	##	##
:			

IMAGE DATA

FIG. 22

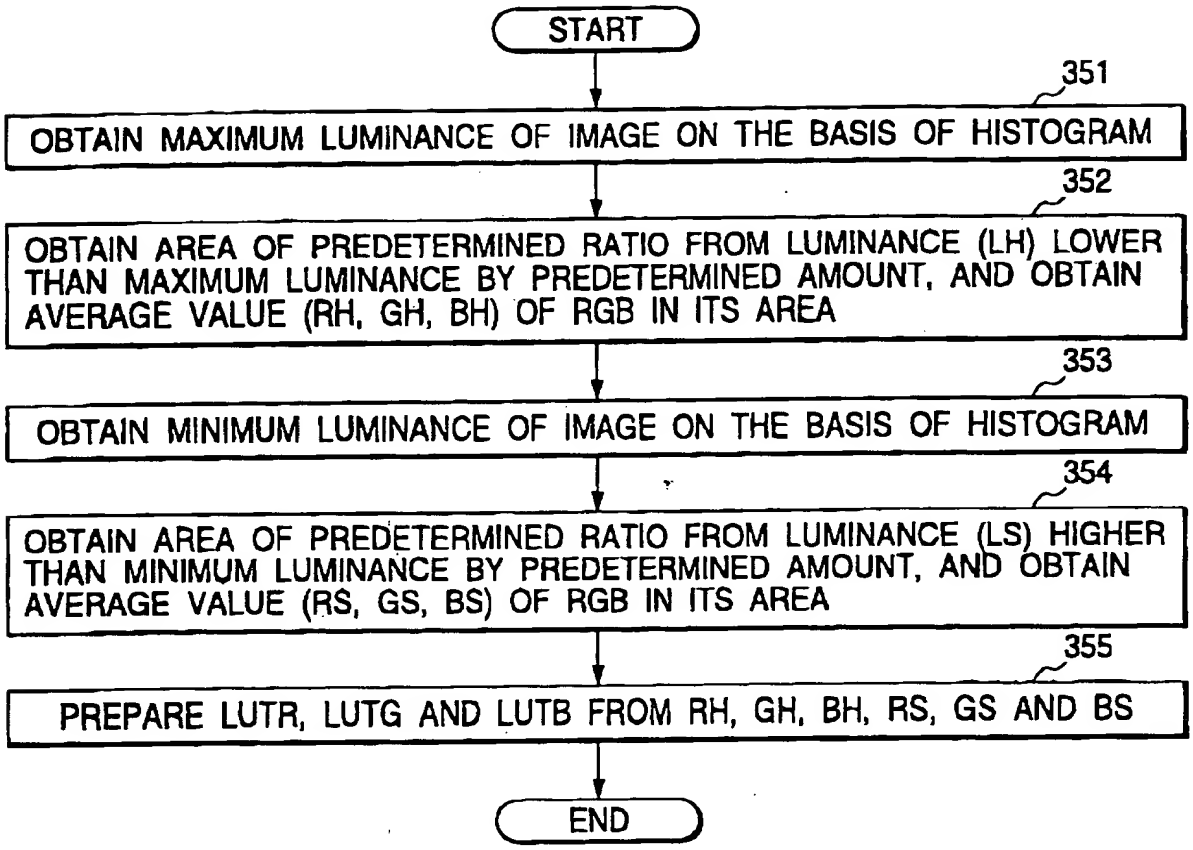
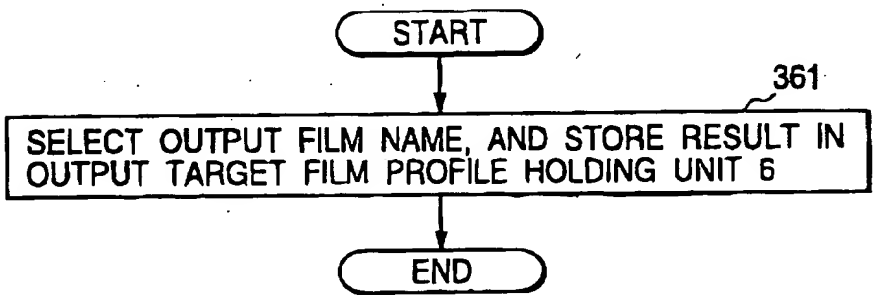

START
351
OBTAIN MAXIMUM LUMINANCE OF IMAGE ON THE BASIS OF HISTOGRAM
352
OBTAIN AREA OF PREDETERMINED RATIO FROM LUMINANCE (LH) LOWER THAN MAXIMUM LUMINANCE BY PREDETERMINED AMOUNT, AND OBTAIN AVERAGE VALUE (RH, GH, BH) OF RGB IN ITS AREA
353
OBTAIN MINIMUM LUMINANCE OF IMAGE ON THE BASIS OF HISTOGRAM
354
OBTAIN AREA OF PREDETERMINED RATIO FROM LUMINANCE (LS) HIGHER THAN MINIMUM LUMINANCE BY PREDETERMINED AMOUNT, AND OBTAIN AVERAGE VALUE (RS, GS, BS) OF RGB IN ITS AREA
355
PREPARE LUTR, LUTG AND LUTB FROM RH, GH, BH, RS, GS AND BS
END

FIG. 23


START
361
SELECT OUTPUT FILM NAME, AND STORE RESULT IN OUTPUT TARGET FILM PROFILE HOLDING UNIT 6
END